the fuel cell system, and is used for both oxidant and coolant, characterized in that the air is introduced into the fuel cell system with a rate resulting in a stoichiometric rate in the range between 25 and 140.

2. (Amended) Method according to claim 1, wherein the stoichiometric rate is in the range between 45 and 90.

3. (Amended) Method according to claim 1, wherein the air flow direction within said fuel cell system is alternatingly reversed after certain time spans.

4. (Amended) A fuel cell system adapted to be operated according to the method of claim 1, the fuel cell system comprising at least one active membrane sandwiched between an anode layer and a cathode layer and comprising a catalyst, and a fuel supply having access to the anode layer and an air supply having access to the cathode layer, wherein the cathode layer(s) or a part of the cathode layers is equipped with air penetrating ducts allowing an air flow parallel to the membrane at a flow rate resulting in a stoichiometric rate in the range between 25 and 140.

5. (Amended) Fuel cell system according to claim 4, wherein the air penetrating ducts are formed in an air conducting layer which is adjacent and in contact to the cathode layer the latter one having diffusion properties.

6. (Amended) Fuel cell system according to claim 4, wherein the air penetrating ducts consist of channels formed in

the cathode layer or in the air conducting layer and extending along the air flow path.

7. (Amended) Fuel cell system according to claim 6, wherein in the flow direction, the total of the channel section area decreases.

8. (Amended) Fuel cell system according to claim 4, wherein it comprises a fuel cell stack which has a geometrical form of a parallelepiped with a rectangular traverse section wherein the air penetrating ducts of each single cell are directed parallel to the short edge of the rectangle.

9. (Amended) Fuel cell system according to claim 4, wherein it comprises a fuel cell stack which has a geometrical form close to a cylinder, and has individual cells each comprising an active area in the form of a circular ring, the circular rings in the stack delimiting a central tube within the stack from which tube the air penetrating ducts spread and direct the air flow radially through the individual cells.

10. (Amended) Fuel cell system according to claim 9, wherein the air flow is generated by one or two blowers located at one or two endplates of the fuel cell stack.

11. (Amended) Fuel cell system according to claim 4, wherein it comprises a fuel cell stack with gas separator plates between the single fuel cells, and wherein the material of said gas separator plates has a ratio heat conductivity parallel to the membrane to density of > 0.04 W m^2/(kg K).